

REMARKS

This AMENDMENT UNDER 37 CFR 1.111 is filed in reply to the outstanding Office Action of May 8, 2003, and is believed to be fully responsive thereto for reasons set forth below in greater detail.

Responsive to paragraph 1 of the Official Action, proposed corrections to Figures 2, 3, 6, 7 and 8 are attached hereto.

Responsive to paragraphs 2 and 3, the specification has been amended to correct errors, to correspond to the amended Figures, and to update the citations on pages 2 and 3.

The rejection in paragraph 5 of the Official Action questions “one phase or many phases” at the end of claims 5, 8 and 12, for example. The specification explains increasing or decreasing the number of features in the Summary on pages 4-5, the paragraph on pages 10-11, the first full paragraph on page 12, and at the top of page 16. The closest explanation to “one phase or many phases” appears to be “increase or decrease the features in steps” at the top of page 5. In view thereof, the claims have been amended to recite “increase or decrease the features in one or more steps.”

Reconsideration is respectfully requested of the rejection of the claims herein over Bloomberg in view of the more limited nature of the amended claims and the following comments on the distinctions and advantages of the present invention and claims over Bloomberg.

The present invention provides a method of embedding watermark information into a document image, such that both the watermark information and the document image can be subsequently detected and recovered.

In contrast, Bloomberg encodes information in an iconic version of the text image, such that the version of the text image replaces the original document image such that the original document image cannot be recovered from the iconic version of the text image.

This is clear from col. 4, lines 24-36,
The iconic image includes embedded encoded data in a position where the reduced version of text in the original text image would appear, and are rendered as a series of rectangular blocks. At the reduced size, these rectangular blocks appear as straight lines and have the appearance of the familiar “greeked” text, a technique that is used to replace the rendering of actual text when rendering actual text reduces performance or efficiency of an operation. Thus, a viewer of the iconic image who is unable to see a reduced version of the text is not likely to interpret the “greeked” text as a signal of the presence of embedded data, but is more likely to interpret it as a normal consequence of the image reduction operation.

Accordingly, claim 1, for example, distinguishes over Bloomberg by
“An embedding method for embedding additional watermarking information into the data representing text information as a black and white binary document image.”

Bloomberg does not embed additional watermarking information into data representing text information, but instead inserts encoded data in place of data representing text information.

Moreover, although Bloomberg does divide the encoded data into rectangular blocks as illustrated in Figures 8 and 9, particularly Figure 9, which might be considered as subblocks within the context of the claims, Bloomberg does not disclose a step of “dividing said subblocks into two or more groups.”

Moreover, since Bloomberg does not divide the subblocks into two or more groups, Bloomberg also does not disclose steps of,

“extracting features for respective groups; modifying said features based on additional information; embedding the features into said respective groups.”

On page 4, first full paragraph of the Office Action, the Examiner states,

“Referring to claims 3 and 10, the feature comprising either one or a combination of the number of black pixels, the transitive number of black and white pixels, the occurrence frequency of any specific local pattern or the average thickness of a line segment is explained by Bloomberg in column 11, lines 36-46.”

This statement is completely erroneous as Bloomberg only refers therein to interblock spacing, block height, block length and interline spacing all shown clearly in Figure 9.

On page 5, referring to claims 5 and 12, the Examiner alleges,

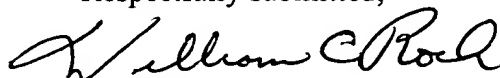
“Dividing the embedded text image area into two subblocks vertically and two or more subblocks horizontally is illustrated by Bloomberg in Figure 8.”

Claim 1 states splitting the embedded text image area into two or more subblocks, and then dividing the two or more subblocks into two or more groups. Bloomberg does not disclose dividing the two or more groups in any respect, and it is clear that the Examiner is attempting to read the claims on Bloomberg totally through hindsight and by an attempted reconstruction of the present invention from the prior art.

Moreover, claims 5 and 12 have now been limited to specify “physically located upper” and “physically located lower” to further distinguish from the attempt to read the claims as numerically upper (1) and numerically lower (0) subblocks.

This application is now believed to be in condition for allowance, and a Notice of Allowance is respectfully requested. If the Examiner believes a telephone conference might expedite prosecution of this case, it is respectfully requested that he call applicant's attorney at (516) 742-4343.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "William C. Roch". The signature is fluid and cursive, with the first name "William" and last name "Roch" clearly distinguishable.

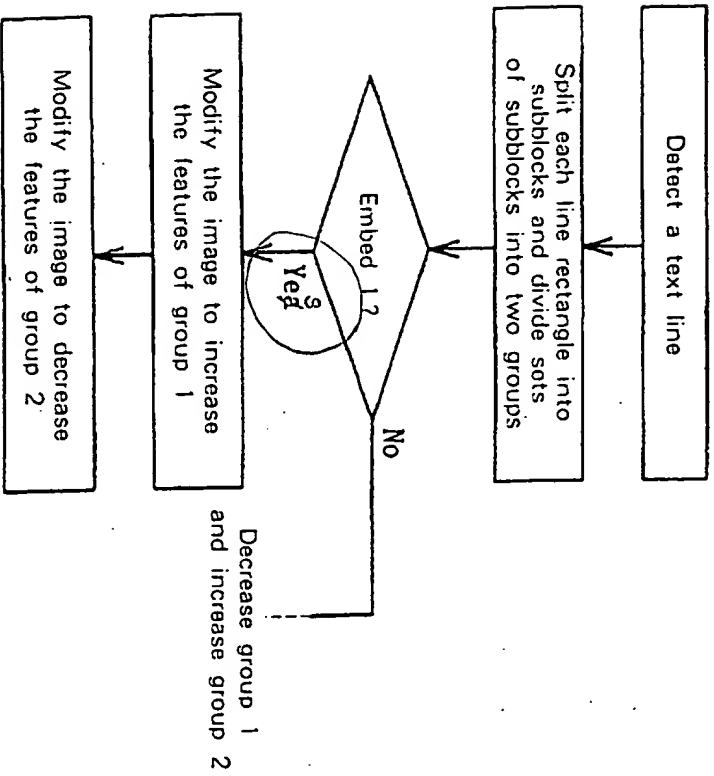
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WCR/jf

(a) Embedding process flow



(b) Detecting process flow

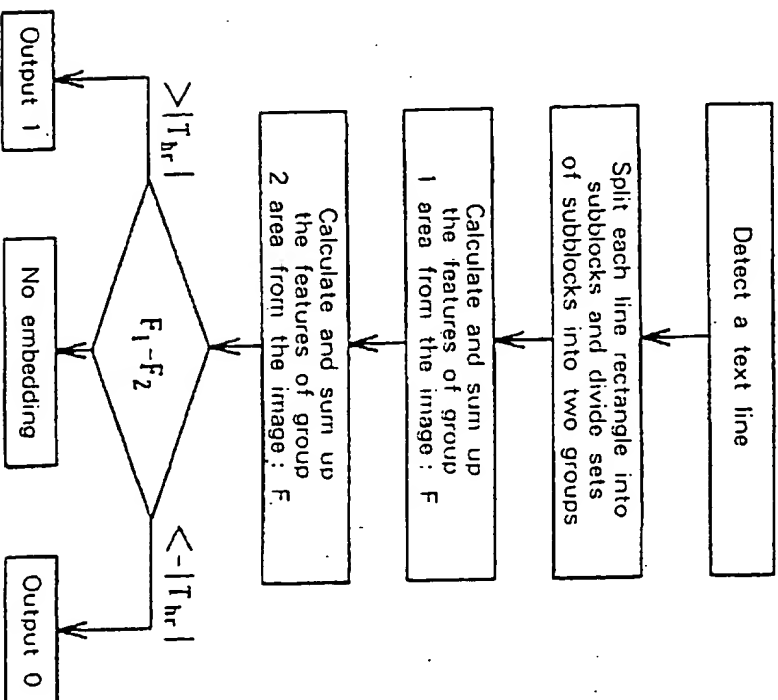
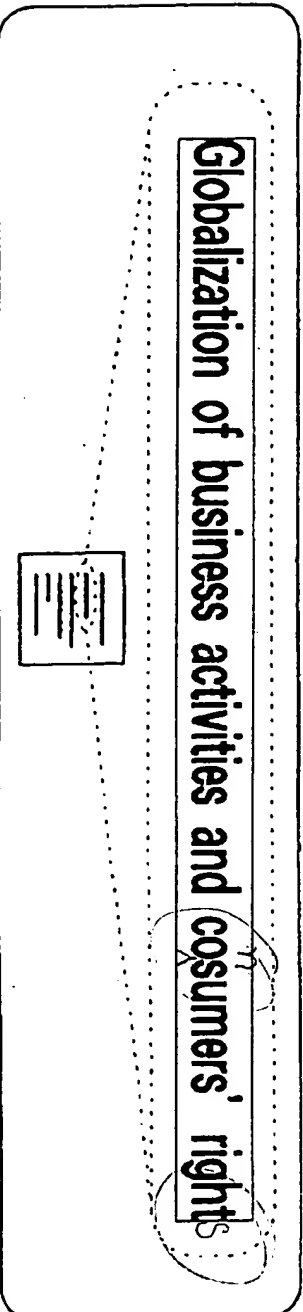


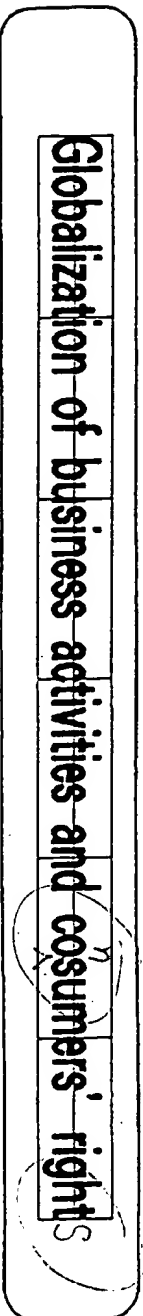
Fig. 2



(a) Text line rectangle



(b) Example of splitting into subblocks



(c) Example of grouping ((1) and (2) represent the groups they belong to)

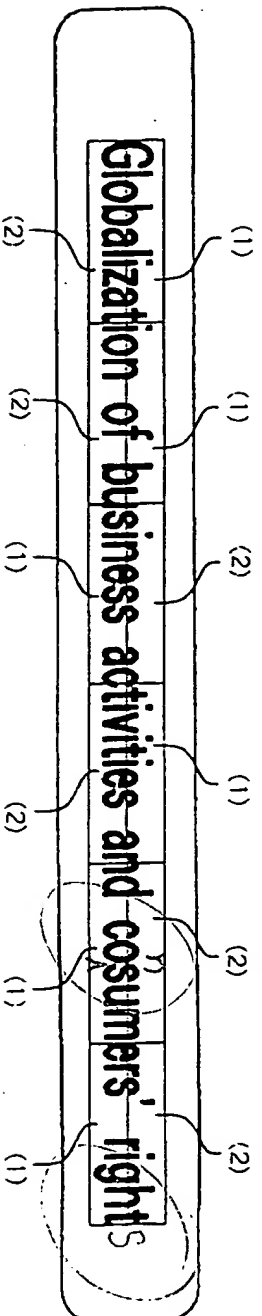


Fig. 3



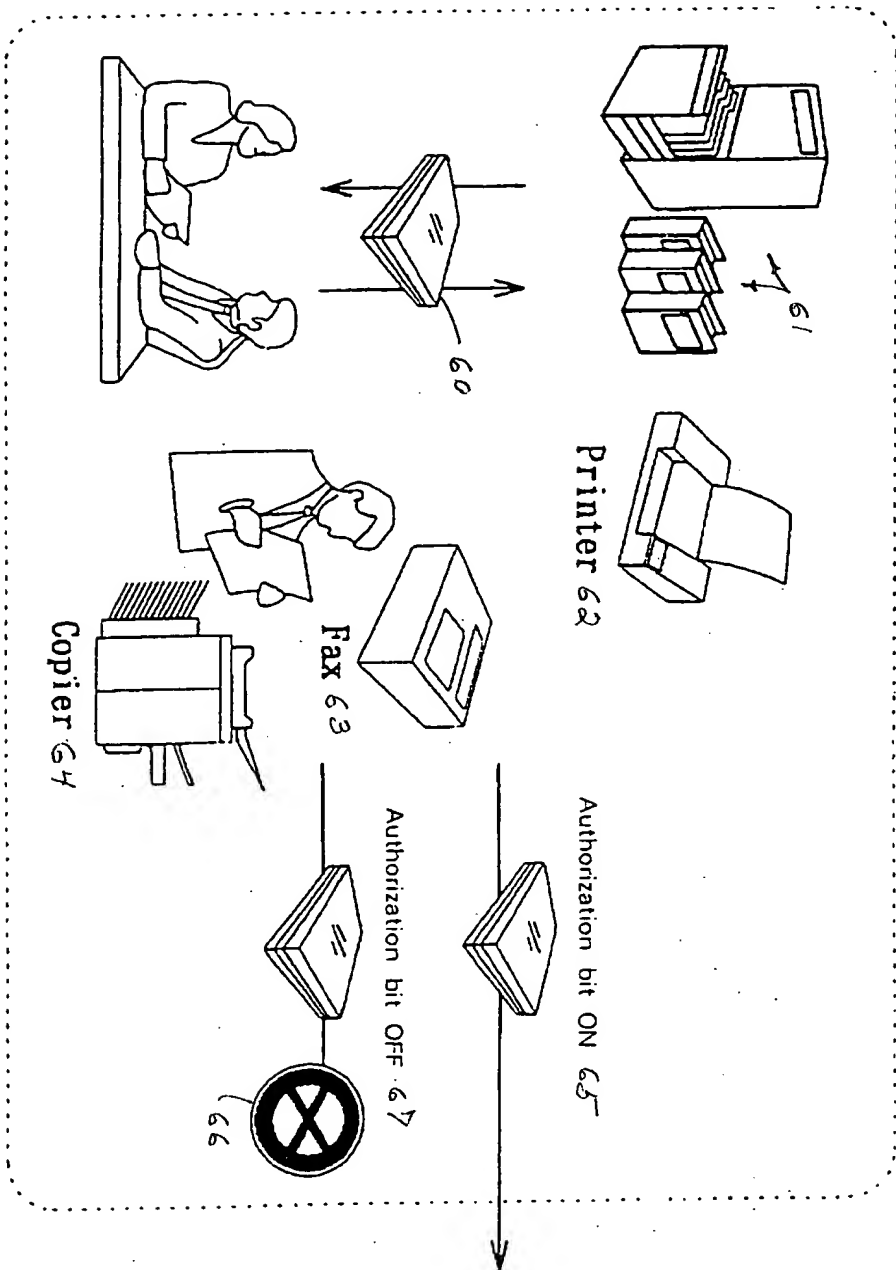


Fig. 6

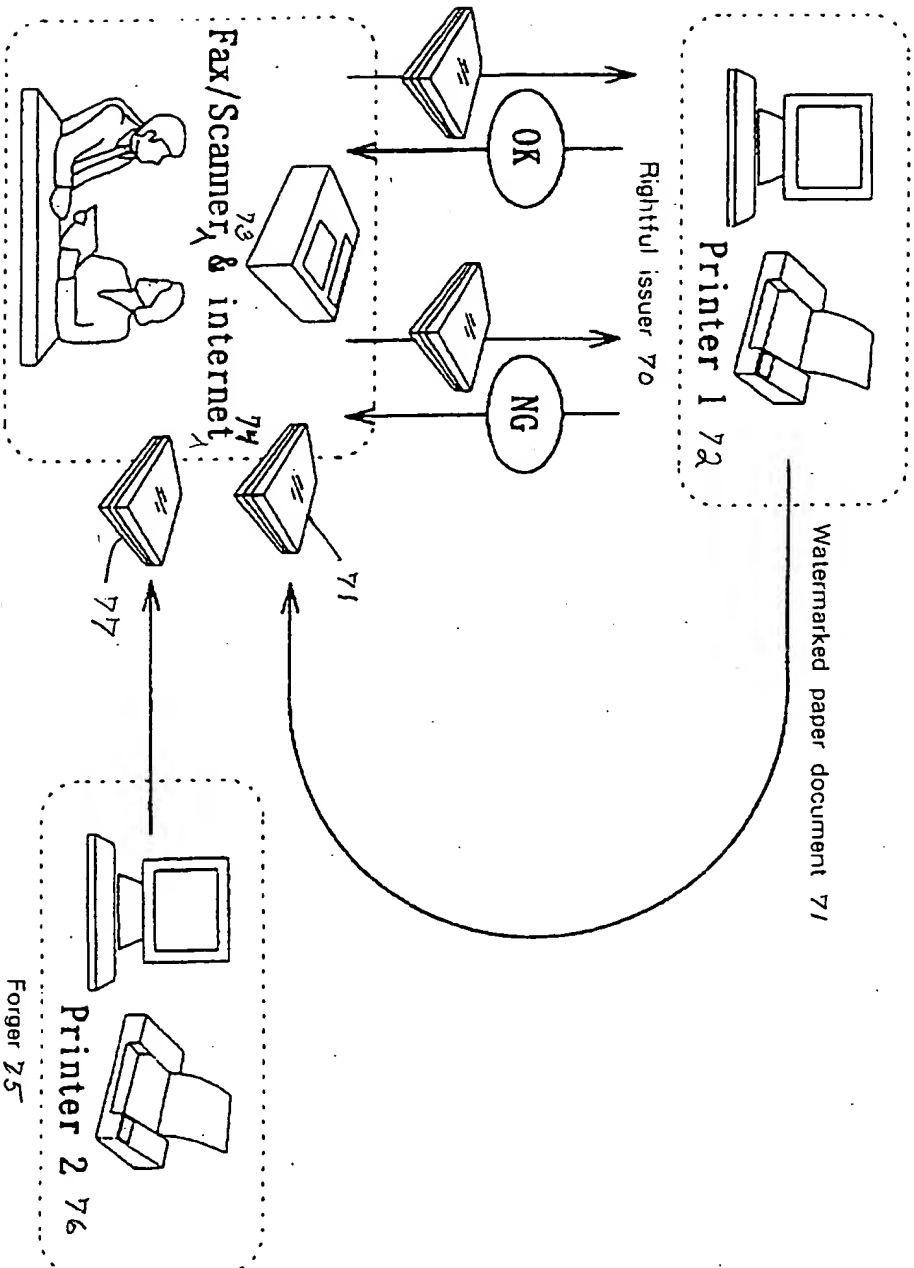


Fig. 7



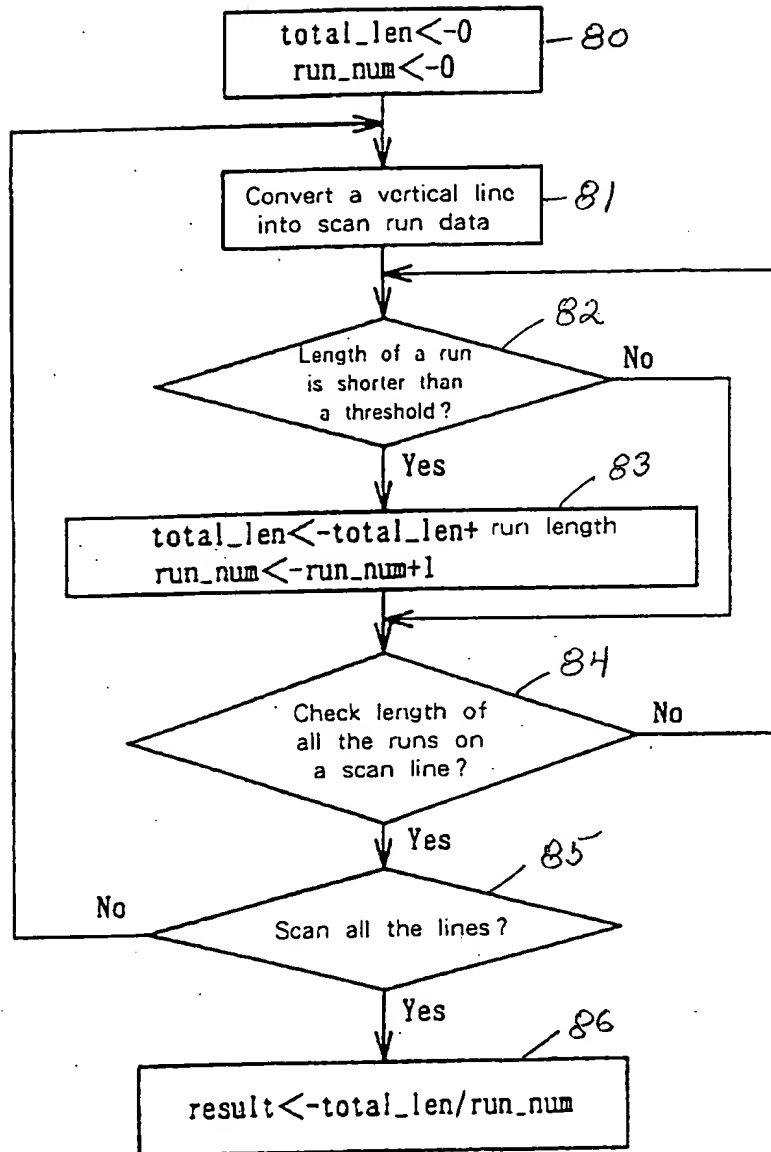


Fig. 8